

Subject pool effects in a corruption experiment: A comparison of Indonesian public servants and Indonesian students

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Abstract We report results from a corruption experiment with Indonesian public servants and Indonesian students. Our results suggest that the Indonesian public servant subjects have a significantly lower tolerance of corruption than the Indonesian students. We find no evidence that this is due to a selection effect. The reasons given by the subjects for their behaviour suggest that the differences in behavior across the subject pools are driven by their different real life experiences. For example, when abstaining from corruption, public servants more often cite the need to reduce the social costs of corruption as a reason for their actions, and when engaging in corruption, they cite low government salaries or a belief that corruption is a necessary evil in the current environment. In contrast, students give more simplistic moral reasons. We conclude by emphasizing that results obtained from different subject pools can complement each other in illuminating different aspects of the same problem.

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1 Introduction

This paper compares the behavior of Indonesian public servants with the behavior of Indonesian students in a corruption experiment. It builds on Cameron et al. (2006), where we used an experimental design to explore whether there are systematic cultural differences in the propensities to engage in and punish corrupt behavior, and found that student subjects in Indonesia are less tolerant of corruption than student subjects in India, Singapore, and Australia.¹ In this paper, we explore to what extent the low tolerance level of the Indonesian students is shared by the country's public servants.²

Data from different subject pools can illuminate different aspects of the corruption problem. Experiments conducted with students as subjects are open to criticism on the basis that because students are likely to be idealistic and have little experience of the real world, their behaviour and views may not reflect those of society at large. However, if regime change is driven from the grass roots, often with vigorous student involvement, student attitudes might well be an appropriate gauge of a country's future with regard to corruption. On the other hand, to the extent that public servants are in a role in which they regularly have to decide whether to engage in, tolerate, or dissuade corrupt acts, their attitudes to corruption are also an important, albeit different, gauge of the extent and future of a country's corruption problems.

The experiment that we report in this paper can be classified as both an “artefactual” and a “framed” field experiment according to the taxonomy developed by Harrison and List (2004). That is, we examine behaviour using a non-standard subject pool and explicitly introduce context from the field to the laboratory experiment by using loaded language and roles specific to the context. There has been a tradition in experimental economics of relying on non-emotive neutral language in experiments. However, there is growing evidence that providing a context for the experiment might be desirable, especially in cases when the participants have direct experience with the particular context being studied. For example, both Cooper et al. (1999) and Harrison and List (2005) find that introducing a context that expert subject pools recognize

¹The results in Cameron et al. (2006) are consistent with the outcome of the surveys conducted by Transparency International in 44 countries which showed that Indonesians were the most optimistic about future corruption reduction while Indians were amongst the most pessimistic. See unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN016537.pdf. The World Bank's “voice and accountability” index also puts Indonesia among those countries that have achieved a sharp improvement in corruption reduction since 1996 (Kaufman 2005).

²Indonesia is an especially interesting country to study because of its experience with corruption and its recent past. Although it is consistently ranked as one of the most corrupt countries in the world, the introduction of democracy in 1998 and the increased press freedom have resulted in corruption receiving a lot of negative media attention. Public resentment of large scale corruption was one of the major causes of the regime change from dictatorship to democracy.

from their past experiences triggers an application of learning from those past experiences.³

The extent of differences in behaviour across subject pools has been of considerable methodological interest to experimental economists. The literature that has sought to examine subject pool effects has largely explored gender and educational differences amongst students.⁴ Recently, there has been an increase in the use of non-standard subject pools in experiments, such as financial market traders (Alevy et al. 2006), sportscard dealers (List 2003; Harrison and List 2005), nurses (Cadsby and Maynes 1998; Barr et al. 2004), CEOs (Fehr and List 2004), managers in Chinese state-owned enterprises (Cooper et al. 1999), public affairs officials (Potters and van Winden 1996), and a random sample of the general population (Carbone 2005). Only a subset of these studies directly compares the results from the non-standard subject pool with the results from the student subject pool. The results on whether the subject pool matters are mixed. While some papers find very little or no effect of demographics on behaviour (Carbone 2005; Kovalchik et al. 2004), others find significant differences (Croson and Gneezy 2004; Alevy et al. 2006; Fehr and List 2004; List 2003). None of these papers explore subject pool effects in the case of a corruption experiment.⁵

A framed experiment allows us to analyse both the behavioural differences between the public servant and student subjects, and the reasons for these differences. The differences in behaviour may be due to an experience effect if the differing experiences of the two groups lead to the adoption of different norms of behaviour. Indonesian public servants are frequently exposed to corruption in their workplace⁶ while Indonesian students' exposure to corruption is possibly more limited and indirect. Hence, an experience effect would be present if a high exposure to corruption in the public service leads public servants to adopt a more tolerant norm of corrupt behaviour, if the difficulty of living on low salaries makes them more susceptible to the temptation of corruption, or if a more direct exposure to corruption and its costs increases their aversion to it.⁷ Alternatively, the differences in behaviour may be driven by a selection effect if those who choose to join the public service are inherently more or less corrupt than those who are attracted to the private sector. The data we collected allows us to examine the extent to which the differences in behaviour across the two subject pools can be explained by either one of these two effects.

Two other reasons for observing subject pool differences may be scrutiny effects and differences in the payoffs. That is, it may be the case that one group is more

³This is consistent with the findings in cognitive psychology. See, as cited in Cooper et al. (1999), Gick and Holyoak (1980), Perkins and Salomon (1988), and Salomon and Perkins (1989).

⁴There has also been a focus on whether business and economics students (who make up a disproportionate share of the student subjects) differ from the students coming from the other fields.

⁵See Abbink (2006) for a review of the literature on laboratory experiments on corruption.

⁶Indonesia is currently ranked by Transparency International as one of the most corrupt countries in the world (with a ranking of 130 among the 163 countries ranked). See www.transparency.org/policy_research/surveys_indices/cpi.

⁷See Abbink (2002) for a study of whether distributive fairness considerations make relatively well-paid public officials less corruptible.

sensitive to a scrutiny effect than the other one or that the ratio of the financial rewards in the laboratory to the outside wages is different across the two subject pools. Hence, while analysing the reasons for the observed differences in behaviour across the two subject pools, it is important to control for these two factors. We explain in detail how we dealt with these issues in the design of our experiment in Sect. 2.

The rest of the paper is structured as follows. Section 2 details the experimental design and procedure. Section 3 compares the results from the student pool with those from the public servant pool, and explores the reasons for the differences. Section 4 concludes by offering an interpretation of our results and discussing their implications.

2 Experimental design and procedures

2.1 Design

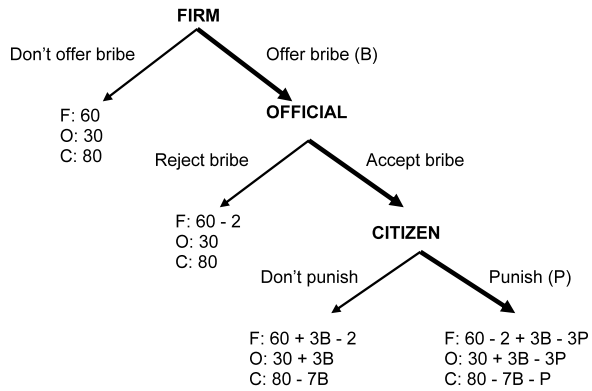
The experiment is based on the three-person, sequential-move game introduced in Cameron et al. (2006). It is intended to capture a typical and pervasive bribery problem in many developing countries, where, for example, the manager of a firm may offer a bribe to avoid complying with an environmental or a health regulation.⁸ One of the fundamental aspects of corruption is that the parties who engage in it benefit from it at the expense of parties external to the corrupt transaction. We wanted to examine the behavior of parties on both sides of the corruption problem, those who are perpetrators of it as well as those who are victims of it. Hence, our experiment is based on a game where two players can act corruptly to increase their own payoff at the expense of a third player. Since the bribery that takes place between the first two players is assumed to be illegal, the third player, the victim, is allowed to punish the first two players at a cost.

Figure 1 contains an extensive-form representation of the game, where all of the payoffs are denoted in experimental dollars. The players are denoted as the “Firm,” “Government Official,” and “Citizen.” They start with an endowment of 60, 30, and 80 experimental dollars, respectively. The Firm moves first and must decide whether to offer a bribe to the Government Official, and if so, how much to offer. It can choose a bribe amount $B \in [4, 8]$. It costs the Firm two experimental dollars to offer a bribe and the Firm incurs this transaction cost regardless of whether the bribe is accepted. If a bribe is offered, the Official can either accept or reject the bribe. Acceptance of the bribe implies favorable treatment of the Firm. It increases the payoffs of both the Firm and the Official by $3B$, but decreases the payoff of the Citizen by $7B$.⁹ As mentioned above, the payoff increase that the firm experiences may represent, for

⁸Note that the World Values Survey also assesses attitudes towards corruption in different countries by asking people their views on how justifiable it is to accept a bribe. See www.worldvaluessurvey.org/.

⁹We assume that the Official’s payoff increases by $3B$ due to a difference in the marginal utility of income for the Firm and the Official. Since the income earned in the public service is likely to be lower than the income earned in private firms, the same amount of money can be assumed to have a lower marginal utility value to the Firm than to the Official. Abbink et al. (2002) make a similar assumption. This assumption also has the additional advantage of helping us prevent negative payoffs.

Fig. 1 The game tree



example, the benefit from avoiding a regulation.¹⁰ We assume that the bribery has a significant impact on society. This is captured by the large decrease in the Citizen’s payoff.

The Citizen observes the decisions made by the Firm and the Official and can punish them for the act of bribery by choosing an amount $P \in [2, 12]$ in penalty. Punishment is costly to the Citizen and reduces the Citizen’s payoff by the amount of the punishment, P . However, it imposes a monetary sanction on the Firm and Official by reducing their payoffs by $3P$. Hence, the net benefit to the Firm and the Official from the corrupt transaction is $3B - 2 - 3P$ and $3B - 3P$ respectively.

We have chosen to conduct a one-shot game because in a one-shot game the punishment has no economic benefit to the Citizen. Hence, in the subgame perfect equilibrium of the one-shot game, a payoff-maximizing citizen does not punish. Knowing this, the official accepts the bribe and the firm offers the maximum amount of bribe it can since its payoff is increasing in the amount it offers. Since the decision to punish is not affected by the anticipation of possible future economic gains, the Citizens’ willingness to punish helps us capture their tolerance of corruption more directly. In other words, the Citizens who choose to punish in a one-shot game would have even more incentive to punish in a multi-period game since by doing so, they can possibly deter corruption and decrease the harm they suffer. The one-shot nature of the game also helps us avoid issues associated with repeated games, such as signaling, reputation formation, and serial correlation in decisions.

We have also deliberately chosen to use emotive terms such as “bribe” and “punishment” in the instructions. As mentioned in the introduction, the use of a mean-

¹⁰We could also try to capture attitudes towards corruption by observing how willing subjects are to break an explicit rule stated in the lab in order to increase their individual payoffs. However, such an approach would possibly raise significant questions regarding experimenter demand effects. The subjects may not reveal their true preferences because they may not want to go against a rule set by the experimenter, the authority figure in the lab. For example, Cadsby et al. (2006) point out in their study of tax compliance that demand for compliance with a specific course of behavior often leads to extreme compliance in the laboratory. They report that simply telling people that they are required to pay a “participation fee” analogous to a tax produces remarkably high (close to 100%) compliance. Even if the subjects revealed their true preferences, it is not clear that we would be capturing anything more than what we are capturing with the current design, which closely follows the previous approaches in the literature (see Abbink 2006).

ingful context might better capture behavior in field settings than the use of neutral language.¹¹ Moreover, context may be an important element in revealing subject pool differences as they trigger considerations of participants' own experiences which may differ across the different subject pools.

2.2 Procedure

The experiments were run at the University of Indonesia and the Sekolah Tinggi Ilmu Administrasi (STIA), which is a training college for public servants. Both institutions are located in Jakarta. The student subject pool consisted of third-year undergraduate and postgraduate students. 180 student subjects and 147 public servant subjects participated in the experiments. Each subject participated only once and in only one role. Since each play of the game involves three subjects, this gives us 60 plays of the game (i.e., 60 independent observations) for the students and 49 for the public servants.

All the sessions were run as non-computerized experiments and exactly the same procedure was used in the experiments with both subject pools. Each experimental session lasted about an hour. At the beginning of each session subjects were asked to come to a large lecture theatre. Each session consisted of at least 30 subjects. The subjects, on entering the room, were randomly designated as Firms, Officials, or Citizens. Each group was located apart from the others in a recognizable cluster. Thus, each group could see the members of the other groups, but individual subjects were unaware of which three specific subjects constituted a particular Firm-Official-Citizen trio and would not learn this information at any point during or after the session.

To avoid experimenter effects, the experiments were conducted by the same team of experimenters, which included an Indonesian researcher and an Indonesian research assistant. At the beginning of each session, each subject received a copy of the instructions, which were read out loud to them. While going over the instructions, the subjects were given a number of examples explaining how the payoffs would be calculated for specific bribe and punishment amounts. Then, the subjects playing the role of a Firm were asked to make their decisions. After they finished making their decisions, the record sheets with their bribe amounts were collected and distributed by the research assistant to the corresponding Officials. After the Officials made their decisions, the corresponding Citizens were informed whether a bribe was offered and whether it was accepted. The experiment ended after the Citizens decided whether to punish or not.

¹¹We ran both neutral-language and loaded-language experiments with students in Australia. In the neutral language sessions, we used "transfer money" instead of "offer a bribe" and "forego money to reduce another player's payoff" instead of "punish." In the neutral-language sessions, the behavior was much closer to the game theoretical predictions. 31 of the 32 subjects who participated in the neutral-language sessions offered a transfer and all transfers were accepted. The reasons the subjects gave for their behaviour were also different. While the reasons given in the neutral-language sessions cited profit maximisation, fairness, and negative reciprocity, the reasons given in the loaded-language sessions often referred to moral considerations and a desire to reduce corruption. These results indicate that the use of loaded-language is important in providing a context and triggered an application of the subjects' attitudes to corruption.

The decisions made by all of the subjects were entered into a spreadsheet which generated their payoffs. The subjects were paid at the end of each session after the payoffs were converted into cash. Since the equilibrium payoffs were highly asymmetric across the different player types (Firm, Official, and Citizen), we used different conversion rates for the different types.¹² The conversion rates also took into account the differing income levels of the public servants and students. In the sessions with student subjects, the conversion rates were: 1 experimental currency = 1000 Indonesian Rupiah for the firms, 1500 Indonesian Rupiah for the officials, and 2000 Indonesian Rupiah for the citizens. In the sessions with the public servant subjects, they were: 1 experimental currency = 1500 Indonesian Rupiah for the firms, 2000 Indonesian Rupiah for the officials, and 2500 Indonesian Rupiah for the citizens.¹³ These conversion rates were public information.

Each student subject made on average US \$8¹⁴ in the experiment while each public servant subject made US \$12. Hence, the average earning of the public servants was 1.5 times higher than the average earning of the student subjects. The average hourly wage of the public servants, across all ranks and levels, is approximately equal to 55 US cents.¹⁵ Assuming that students would receive an amount close to the minimum wage if employed (which in Jakarta is equal to 31 US cents per hour), the average hourly wage of the public servants is approximately 1.77 times higher than that of the students. These figures imply that the ratio of average experimental earnings to actual hourly wages was approximately 22 for the public servants and 26 for the students. Hence, both groups made decisions under reasonably high stakes.¹⁶

After the experiment, the subjects filled out a demographic survey which asked them a series of questions regarding their age, gender, field of study, work experience, expenditure levels, religion, ethnicity, and level of exposure to corruption. They were also asked to explain the motivation for their decisions. The student subjects were

¹²Different conversion rates for different player types are sometimes used in experiments if the payoffs are expected to be very different across the subjects. See, for example, Cason and Noussair (2007), Schmitt (2004), and Cason et al. (2003). Davis and Holt (1993) argue that average payments in experiments should be high enough to compensate all participants for the opportunity cost of their time (pp. 24–26). Moreover, recruiting subjects for experiments can be very difficult if payoffs are not within the range announced for all subjects. Having different conversion rates for the different player types helped us in these respects.

¹³The relative conversion rates used differ slightly across the treatments because of the need to increase the stakes for the public servants while having relatively round numbers for ease of calculation. As a result, we cannot rule out the fact that the relative conversion rates had an impact on behaviour. For example, given the evidence on social welfare considerations (see, e.g., Charness and Rabin 2002), they could have affected behaviour in the two subject pools differently. However, we tried to minimise the differences in the relative conversion rates across the different subject pools. Hence, if the firm chooses to pay a bribe of one experimental currency, it would reduce social welfare by 6500 Indonesian Rupiah in the treatment with students and by 7000 Indonesian Rupiah in the treatment with public servants.

¹⁴This has approximately the same purchasing power as US \$15–20 in the US.

¹⁵This figure was obtained from the website containing information on the determination of civil servant salaries in Indonesia. See http://www.pu.go.id/sekjen/ biro%20hukum/perpres/perpres1_06.html.

¹⁶Note that Cameron (1999) finds that, in the context of the ultimatum game, behaviour amongst Indonesian students was not responsive to differences in stakes.

additionally asked whether after graduating they wished to work in the private or public sector.¹⁷

In designing the experiment, we were acutely aware of the need for anonymity to reduce scrutiny effects—especially in the case of the public servants—between the subjects and the experimenters, and among the subjects themselves. Scrutiny effects reflect the desire on the part of subjects to send a signal to the experimenter or be perceived by the experimenter in a certain way.¹⁸ The concern in the context of our experiment is that the observed behavioral differences between the public servants and the students may potentially be due to the presence of a more severe scrutiny effect amongst the public servants. We took a number of steps to reduce this possibility. First, we conducted the public servant experiments at the training college for public servants, STIA, rather than at a particular government ministry or somewhere closely associated with their place of work. STIA trains public servants from all across Indonesia. Our sample covered people from over 60 different ministries and government offices coming from as far as Aceh in the east to Papua in the west. The experiments were thus conducted far from the participants' place of work. Second, the experiments with the public servants were conducted on a Saturday as part of a college festival and, hence, outside the normal study structure and not in the presence of any faculty or college employees. Third, for both public servant and student subjects, we explained at the start of each session that the game was to be played anonymously. The participants were told that they would not know who they were matched with. The participants' names could not be linked to their behaviour. Rather, participants were given a ticket that assigned them a code. This code was written on the sheet of paper on which they marked their decisions and on their post-experiment survey. This code enabled us to match the decisions of the different members of each group and to link the participants' decisions with their survey responses. To receive their payments, the participants were asked to present the ticket which showed their code. Thus, there were no matching records and no way for us to determine which individual had which code. That we were unable to match the decisions of individual participants with their names was stated out loud and stressed several times at the start of each session. Fourth, to ensure privacy throughout the decision-making

¹⁷The instructions, record, and survey sheets are available from the authors upon request. The documents were prepared in English, translated into Indonesian by a native Indonesian speaker, and then checked by both a native Indonesian speaker who is fluent in English and a native English speaker who can read Indonesian.

¹⁸See Levitt and List (2006). Scrutiny effects are particularly problematic if one wishes to use the experimental results in a predictive manner. For example, having observed that a father does not cross a road against a red light in front of his children, one would not necessarily want to predict that he would not cross against red if on his own. However, in our context there is no supposition that the lab results are predictive in this sense. That is, we would not predict that a subject who does not engage in corruption in the lab will not be corrupt when faced with the realities of the real world, such as living on a low government salary. Rather, we take the differences in the lab results across the different subject pools as indicative of the differences in the underlying attitudes to or tolerance of corruption. In the context of the example given above, note that an observation that parents in congested urban areas are less likely to cross against a red light in front of their children than parents in sparsely populated rural areas is likely to contain information regarding the differences in the underlying attitudes—that urban parents view crossing with the green light as a more important safety lesson to instil in children than parents from the country. It is this kind of a comparative result that we seek in this paper.

process, we made sure that the participants sat at a distance from each other that prevented their neighbours from seeing their decisions. Fifth, to reduce the probability that public servant subjects thought that we were interested in their behavior as public servants, we announced at the start of each session that we were conducting these experiments at a number of educational colleges around the country.¹⁹ Exactly the same procedure was followed with the student subject pool. Specifically, the same emphasis was put on anonymity, privacy, and the absence of faculty or college employees during the experimental sessions.

3 Results

We start our analysis by discussing the differences in the demographic variables for the student and public servant pools respectively. Table 1 presents the summary statistics. It shows that, as expected, the public servants were on average older than the students (with an average age of 30.5 as compared to 20.6) and had more work experience. Specifically, while the public servants had 8.5 years of work experience on average (ranging from 1 to 30 years), the students had fewer than 5 months. A larger proportion of the public servants were male (75% versus 42%) and Muslim (85% versus 66%). The public servants also came from a wider array of ethnic groups. Only 36% of them were from the dominant Javanese ethnic group as opposed to 49% of the students. Finally, as anticipated, the public servants had higher expenditure levels.

Table 1 also presents the subjects' answers to questions about their contact with corruption. As anticipated, a much larger proportion of the public servants reported coming into contact with corruption through their work (55% versus 9%). Interestingly, the students and the public servants had similar amounts of exposure to corruption outside the workplace (reported by 33% of the students versus 32% of the public servants). The students more often reported coming into contact or hearing about corruption through family and friends or the mass media.

In summary, the students differed from the public servants in two important ways: (i) The students had a much more limited personal experience of corruption in the real world, and (ii) 19% of the students stated that they intend to work in the public sector after graduating. We present the demographic variables in Table 1 and control for them in the statistical tests below. Moreover, we use the data on the intention to work in the public sector to examine the extent to which the differences in behavior can be explained by a selection effect.

Figure 2 shows the distribution of bribes for the student and public servant subject pools, respectively. Table 2 presents summary statistics of behaviour, *t*-tests of differences in means, and rank sum tests of differences in distributions.²⁰ It shows that 78% of the student subjects in the role of the Firm chose to bribe while only 47% of the public servants chose to bribe. This is a large difference. As shown in Table 2, it is

¹⁹It is also worth mentioning that in the post-experimental survey responses, none of the 147 public servants stated that their decisions were affected by any aspects of scrutiny.

²⁰Since the rank sum results are virtually identical to the *t*-test results, we only discuss the *t*-tests below.

Table 1 Subject pool characteristics

Variables	Students	Public servants
	Mean	Mean
Age	20.6	30.5
Male	0.42	0.75
Urban	0.89	0.7
Work experience (years)	0.36	8.5
Intention to work in the public sector	0.19	–
Weekly expenditure (Rp)	110534	245711
<i>Religion</i>		
Islam	0.664	0.849
Catholic	0.13	0.041
Protestant	0.2	0.11
Hindu	0.006	0
<i>Ethnicity</i>		
Javanese	0.49	0.36
Chinese	0.12	0
Sudanese	0.08	0.1
Batak	0.11	0.2
Minang	0.07	0.06
Other	0.19	0.28
<i>Hear about or come in contact with corruption</i>		
Personally in your workplace	0.09	0.55
Personally outside your workplace	0.33	0.32
Via friends/family	0.52	0.24
Via mass media (TV, newspaper, radio)	0.74	0.57
No contact	0.09	0.1

strongly statistically significant with a p -value of 0.0005.²¹ The students also offered larger bribes on average. The mean positive bribe amount was 7.3 for the students versus 6.7 for the public servants (p -value = 0.04).

Table 2 shows that bribes were accepted 79% of the time by the student subjects and only 30.4% of the time by the public servant subjects (p -value < 0.0001). The low bribery and acceptance rates of the public servants mean that there were very few public servants who got the opportunity to make a decision in the role of the Citizen. Of the 49 Citizen subjects, only 7 had the opportunity to punish. Punishment behavior is presented in Fig. 3. Table 2 shows that the punishment rate was higher amongst the public servants, again indicating a lower tolerance of corruption (71% versus 59%). However, this difference is not statistically significant (p -value = 0.56).

²¹47% is an extremely low bribery rate. For example, with the same experiment, the bribery rate was 89% among the Australian student subjects and 84% among the Singaporean student subjects (Cameron et al. 2006).

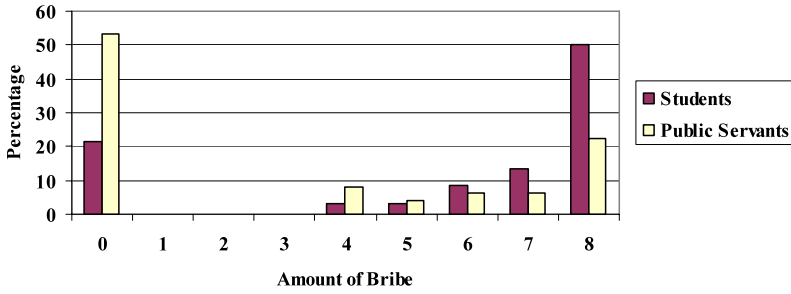


Fig. 2 Firm behavior

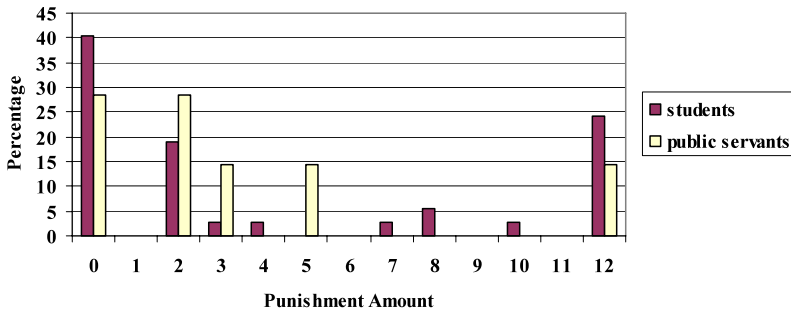


Fig. 3 Citizen behavior

Table 2 T-tests and rank sum tests of statistical difference

	Students	Public servants	t-test (p-value)	Rank sum (p-value)
% of firms bribing	78.3 (N=60)	46.9 (N=49)	0.0005	0.0007
Bribe amount (if > 0)	7.3 (N=47)	6.65 (N=23)	0.04	0.092
% officials accepting	78.7 (N=47)	30.4 (N=23)	0	0.0001
% citizens punishing	0.59 (N=37)	0.71 (N=7)	0.56	0.55
Punishment amount (if > 0)	7.4 (N=22)	4.8 (N=5)	0.26	0.36

This could be due to the small number of observations in the sample for public servants.

Table 3 presents the regression results that control for whether the participant is a public servant or a student (to capture the subject pool effect), male, from a rural area, Javanese, has experienced corruption in his/her workplace,²² and whether a student intends to work in the public sector (to capture the selection effect). We chose

²²As we discuss in Sect. 3.2 below, this is one of the ways in which we seek to identify the effect of experience on behaviour.

Table 3 Regression results

	Bribe (0/1)		Bribe amount		Accept (0/1)	
	1	2	3	4	5	6
	M. effect	<i>p</i> -value	Coeff	<i>p</i> -value	M. effect	<i>p</i> -value
Public official	-0.322	0.019*	-0.85	0.06 [#]	-0.55	0.005**
Intention to work in govt	0.17	0.39	0.119	0.82	-0.16	0.41
Male	0.36	0.01*	-0.39	0.32	0.07	0.65
Rural	-0.16	0.21	0.16	0.71	0.02	0.91
Javanese	-0.17	0.09 [#]	-0.2	0.56	-0.16	0.26
Corruption at work	-0.22	0.1 [#]	0.76	0.13	-0.05	0.81
Bribe amount					0.06	0.22
Test public official = intention to work in govt						
<i>p</i> -values	0.04		0.12		0.06	
<i>R</i> -squared	0.17		0.13		0.22	
<i>N</i>	105		68		69	

[#] (*, **) denotes statistical significance at the 10% (5%, 1%) level. OLS regressions were estimated for the bribe amount and probits for the 0/1 decisions. We also ran an ordered logit for the bribe amount and the results were very similar to the OLS results

to focus on these variables because they are the ones of interest in the existing literature and/or because they were the only ones that were statistically significant in any specification.²³ Notably, controlling for the income and expenditure levels of the subjects in the regressions never yielded statistically significant results (and hence these variables are not included in the reported results). This leads us to conclude that the differences in the living standards and, hence, the differences in the “real” magnitude of the stakes across the different participants are not driving our results. In addition to the variables listed above, the regressions for the acceptance behavior also include a variable on the size of the bribe that was offered. Since the sample size for the punishment behavior of the public servants was too small to be meaningful, the results for the punishment behavior are not reported.

The coefficients on the public servant dummy are in every case statistically significant and consistent with the results of the *t*-tests. That is, the public servant subjects are significantly less likely to offer a bribe and less likely to accept a bribe. In cases when they did offer a bribe, the amount of the bribe was smaller. The results

²³Since age is closely correlated with whether the subject is a student or a public servant, it cannot be directly included in the regressions. However, we can examine whether age is driving the results by running the regressions only with those subjects aged under 30. All of the student participants were aged under 30 whereas only 20 of the public servant participants were in this age bracket. When we do this, the results remain the same, which leads us to conclude that the age difference between the two subject pools is not driving the results.

also reveal that being male has a significant effect only on the propensity to bribe.²⁴ Moreover, being from Java is associated with a lower probability of offering a bribe.²⁵

3.1 Selection effect

To capture the selection effect, as mentioned above, we have created a dummy variable, “intention to work in government,” which is equal to one if the student subject stated that s/he intends to work in the public sector and zero otherwise. The coefficient of this variable tells us to what extent the strong difference in behavior between the students and the public servants is due to a selection effect (as opposed to an experience effect).

As reported in Table 3, in none of the cases is the behavior of those students who intend to work in the government in the future different from the behavior of the rest of the students. However, their behavior is very different from that of the public servants. A test of equality of coefficients shows that both the bribe and the acceptance rates of the students who intend to work in the public sector are significantly higher than those of the public servant subjects ($p = 0.04$ and 0.06 respectively). Thus, the results suggest that self-selection does not play an important role in explaining the differences in the behavior of the two subject pools.²⁶ Given this, it seems that it is the experience of working in the public sector which changes people’s attitudes to corruption.

3.2 Experience effect

We explore the effect of experience on behaviour in a number of ways. First, we included a length of tenure variable for the public servants in the regressions to see if it explains attitudes to corruption. Since it is always insignificant, it is not included in the reported results. Second, we included a variable, “corruption at work,” reflecting exposure to corruption in the workplace. The coefficient on this variable indicates whether experience in a corrupt workplace affects behaviour. As shown in Table 3, it is significant in the bribery probit ($p = 0.10$), indicating that working in an environment where one frequently gets exposed to corruption may make one less tolerant of corruption. Finally, the reasons given by the subjects for their behavior shed considerable light on the role the public servants’ work experience plays in explaining the behavioral differences between the subject pools.

The reasons given by the subjects were in response to open-ended questions. We have grouped these responses into the (non-mutually exclusive) categories shown in

²⁴Gender does not affect the other decisions significantly. We undertake a far more comprehensive analysis of the gender differences in the propensities to engage in corruption using a similar experimental set-up and data from Australia, India, Indonesia and Singapore in Alatas et al. (2008) and find that there is a significant gender difference in the Australian sample only.

²⁵We also analysed whether students differ from public servants in the way they react to the bribe amount. While the acceptance behaviour of the public servants is unaffected by the bribe amount, the students show a higher willingness to accept a bribe when the bribe amount is higher.

²⁶The inclusion of the variable on future work intentions strictly speaking only controls for self-selection into the public service. It is possible, although we would argue unlikely, that the public service selection process is able to pick people who have an unusual aversion to corruption.

Table 4, which presents the breakdown of such responses by subject pool and decisions. Table 5 provides an example for the type of responses given in each category. We explore the explanatory power of these reasons by reporting the *t*-tests of differences in means. One of the most noticeable differences between the public servant and student subjects is that the public servants more often cited experience-related reasons for their decisions—both when acting corruptly and when not. For example, significantly more of the public servant subjects than the student subjects who chose to offer a bribe did so on the grounds that it was necessary given the current Indonesian environment (83% versus 36%, with the difference being statistically significant at the 5% level). Further, 46% of the public servant subjects who did not offer a bribe stated that they did this to reduce corruption and its associated social costs. Such a response was not given by any of the students in our sample. A further 18% of the public servants stated that they did not offer a bribe because it is not in the firm's (and the firm's employees') best interests in the long run. Only 3% of the students gave a similar explanation for their behavior. The student subjects who did not bribe were significantly more likely to give simplistic moral explanations. Reasons such as "I did not bribe because bribery is prohibited by my religion" were given by 77% of the students as opposed to 35% of the public servants.

Looking at the responses of the public servants in the role of the Government Official, we find that 43% of them accepted a bribe on the basis that it is either necessary for firms to offer bribes and that by accepting the bribe, they will be able to help the firms, or that it is necessary given the low salaries of public servants. In contrast, only 11% of the student subjects who accepted a bribe gave one or both of these reasons.^{27,28}

Another striking difference across the two groups is that the student subjects indicated with much greater frequency that they made their decisions to maximize their payoffs. 53% of the students in the role of the Firm and 62% of the students in the role of the Government Official gave this reason in contrast with 2% and 4% of the public servant subjects respectively. All of these differences are statistically significant.

These responses suggest that, consistent with the findings in the experimental literature, the public servants engaged to a greater extent with the context of the experiment. It is also suggested in the literature that the context effect would be larger for the public servants when they are in the role of the Official. We do find that the difference between the behaviour of the two subject pools is the largest in this instance and more strongly statistically significant. The acceptance rates are 48.4% lower amongst the public servants than amongst the students whereas the bribery rates are 31.4% lower.

²⁷These figures are the sum of the two categories "necessary for firms to bribe" and "necessary because salaries are low." The difference between this sum for the student and the public servant subjects is significant at the 5% level.

²⁸Although the sample size for the public servants in the role of the Citizen is very small, the patterns of behaviour are similar to those found for the subjects in the role of the Firm and the Government Official. The two public servants, who had the chance to punish and chose not to, stated that they did not punish because the bribe either is necessary or may be for a good purpose. Such a response was given by only slightly more than half of the student subjects. Moreover, 40% of the public servant subjects (as compared to only 27% of the student subjects) who chose to punish said that they did so to reduce corruption.

Table 4 Reasons for observed behavior

Firms	All		If bribe		If do not bribe	
	Officials	Students	Officials	Students	Officials	Students
<i>Bribe?</i>						
Yes						
Necessary given the current environment	0.39	0.28	0.83	0.36**	0	0
For the social/economic good of the country (e.g. reduce unemployment)	0.04	0.02	0.09	0.02	0	0
Payoff maximization	0.02	0.53**	0.04	0.68**	0	0
To see the response of the official/citizen	0	0.08*	0	0.11	0	0
Morality	0.18	0.17	0	0	0.35	0.77*
To reduce corruption (social costs)	0.25	0**	0	0	0.46	0**
Profit-maximisation (in the long run it is bad for the firm)	0.18	0.03**	0	0	0.35	0.15
Not necessary for firms to bribe	0.02	0	0	0	0.04	0
Equity	0	0.1*	0	0.02	0	0.38**
<i>N</i>	49	60	23	47	26	13
Officials						
<i>Accept?</i>						
Yes						
Necessary for firms to bribe/will be able to help the firm	0.09	0.06	0.29	0.08	0	0
Necessary because salaries are low	0.09	0.02	0.14	0.03	0	0
Payoff maximization	0.04	0.62**	0.14	0.78**	0	0
Equity	0	0.06	0	0.08	0	0
Game will continue	0	0.06	0	0.08	0	0
Morality	0.35	0.06**	0	0	0.5	0.3
To reduce corruption	0.09	0.09	0	0	0.13	0.3
Scared of implications/risk	0	0	0	0	0	0
Payoff maximization	0.04	0.06	0	0	0.06	0.3
Fairness	0	0.02*	0	0	0.06	0.1
Bribe too small	0.09	0	0	0	0.125	0
<i>N</i>	23	47	7	37	16	10

Table 4 (Continued)

Citizens	All		If punish		If do not punish	
	Officials	Students	Officials	Students	Officials	Students
<i>Punish?</i>						
Yes						
Morality	0.43	0.35	0.6	0.59	0	0
Reduce corruption	0.29	0.16	0.4	0.27	0	0
Fairness	0	0.03	0	0.05	0	0
Negative reciprocity	0.14	0.05	0.2	0.09	0	0
Payoff maximisation	0	0.35 [#]	0	0	0	0.87**
Difficult to change system	0.29	0.22	0	0	1	0.53
<i>N</i>	7	37	5	22	2	10

[#] (*, **) denotes a significant difference at the 10% (5%, 1%) level

Table 5 Examples of justifications of behaviour

	Reason coded as	Example of reason given
<i>Firm bribes?</i>		
Yes	Necessary given the current environment For the social/economic good of the country Payoff maximization To see the response of the official/citizen Morality To reduce corruption Profit-maximisation	I had to do it because the officials usually create unnecessary hurdles for Indonesian businesses. Because bribery can benefit the firm as well as many other constituencies. By bribing I will be more able to increase the income of the firm. To examine the responses of the citizen and officials. Because bribery is prohibited by the Muslim religion. Bribery should be eliminated. Indonesia needs a lot of people who are not corrupt. There is no guarantee that my company would benefit from it and it would increase company expenditure instead.
No	Not necessary for firms to bribe Equity	As far as I know, there is an official fee for any form of service given by the government. The government officials get a salary and incentives to provide such a service. Bribing disadvantages innocent citizens.
<i>Official accepts?</i>		
Yes	Necessary for firms to bribe etc Necessary because salaries are low Payoff maximization Equity	Because without bribes firms have difficulties in dealing with officials. I accepted the bribe because officials' salaries are no longer feasible for living. Because I want to get more. Because if I don't bribe then the citizen will gain greater points, while we have spent the same time on this game.
No	Game will continue Morality To reduce corruption	Because I want to continue to play in this game. Because this violates my conscience, culture and religion. In order to create clean governance as demanded by the public. Bribery which has become part of our culture has to be minimised or possibly eliminated. Because if problems arise we then could be involved, because we have indirectly supported corruption. Because the amount of the bribes will be less than the associated fine if the citizen punishes.
<i>Citizen punishes?</i>		
Yes	Bribe too small Moral Reduce corruption	No, because the amount of the bribe offered is so small. I decide to give a punishment for the reason of idealism. Anyone accepting a bribe must be punished, because Indonesia must be free from corruption, collusion, and nepotism.
No	Fairness Negative reciprocity Payoff maximisation Difficult to change system	Because if we allow this to happen, the rich people become richer, and the poor people become poorer. Because the firms wants to get a profit from bribery but I prefer them to get a loss. Giving a punishment will increase the loss that I will get. Since I do not have any power to influence either firms or government.

4 Conclusion

This paper presents results from an artefactual and framed field experiment studying corruption. We find that the Indonesian public servant subjects are significantly *less* likely to engage in corruption than the Indonesian student subjects. This result is especially striking since the use of public office for private gain is seen as an important source of corruption in many developing countries.²⁹ Hence, the blame for corruption in developing countries is often laid at the feet of corrupt public servants.

We do not find any evidence of our result being driven by a selection effect in that the behavior of those students who desire to work in the public sector does not differ significantly from the behavior of the rest of the students. The reasons given by the public servants for either engaging in or not engaging in corruption suggest that the differences in behavior is driven by their different real life experiences.³⁰

The conclusion that a more direct experience of corruption is associated with a lower tolerance of corrupt acts may be explained in terms of the recent institutional changes in Indonesia. The advent of democracy and a free press have allowed widespread public condemnation of the highly concentrated and visible corruption that was previously so prevalent.³¹ The Indonesian public servants may have a lower tolerance of corrupt transactions due to an increased level of monitoring of potentially corrupt activities. Alternatively, the widespread discussions of the negative impact of corruption on economic growth may have led public servants to reconsider their behaviour and aspire to use their critical positions to make a positive difference. More generally, our finding that experience shapes attitudes suggests that training and appropriate workplace leadership can play a significant role in overcoming corruption.

The behavioural differences we observe across the two subject pools do not necessarily limit the relevance of experiments that use student subjects. Rather, they highlight the need for careful consideration and selection of relevant subject pools, in light of the context being studied and the relevance of the subject pool to the policy objective. Data from different subject pools can be used to illuminate different aspects of the same problem. In the context of corruption, our paper suggests that experimental methodology can be used to elicit forward-looking estimates of corruption that indicate a population's propensity to press for and support anti-corruption institutional change.³² Student subjects are more representative of the general population than the subjects drawn from a specific profession. In the current context, they

²⁹See, for example, the World Bank's analysis and anti-corruption initiative at <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPUBLICSECTORANDGOVERNANCE/EXTANTICORRUPTION/0,,contentMDK:20222047~menuPK:384461~pagePK:148956~piPK:216618~theSitePK:384455,00.html>. See also the discussion in Bardhan (2006).

³⁰To explore the experience effect further, it would be interesting to conduct the same experiment with private sector employees who have a similar background as the public servants.

³¹A consequence of this change of sentiment has been the election of the current government, largely on an anti-corruption platform.

³²Such forward-looking measures are important for policy-makers. The most frequently used measures of corruption, such as the Transparency International Corruption Index, measure people's perceptions of the extent of corruption in the recent past. See "Digging for Dirt," *The Economist*, March 18, 2006. Several researchers have raised concerns about the reliability of these measures. See, for example, (Olken 2006).

are the population that is likely to agitate for policy change. A comparison of student attitudes across time or countries can reveal the extent of the mood for change (Cameron et al. 2006). On the other hand, public servants are often an integral part of the corruption problem and their attitudes are an important, but different, component of the difficulty of combating corruption or otherwise of instituting change.

References

- Abbink, K. (2006). Laboratory experiments on corruption. In S. Rose-Ackerman (Ed.), *International handbook on the economics of corruption*. Northampton: Edward Elgar Publishing Inc.
- Abbink, K. (2002). *Fair salaries and the moral costs of corruption*. Bonn Econ Discussion Papers.
- Abbink, K., Irlenbusch, B., & Renner, E. (2002). An experimental bribery game. *Journal of Law Economics and Organization*, 18(2), 428–454. doi:10.1093/jleo/18.2.428.
- Alatas, V., Cameron, L., Chaudhuri, A., Erkal, N., & Gangadharan, L. (2008). Gender and corruption: Insights from an experimental analysis. *Southern Economic Journal* (forthcoming).
- Alevy, J., Haigh, M., & List, J. (2006). Information cascades: Evidence from a field experiment with financial market professional. *The Journal of Finance* (forthcoming).
- Bardhan, P. (2006). The economist's approach to the problem of corruption. *World Development*, 34(2), 341–348. doi:10.1016/j.worlddev.2005.03.011.
- Barr, A., Lindelow, M., & Serneels, P. (2004). *To serve the community or oneself: The public servant's dilemma*. World Bank Policy Research Working Paper, 3187.
- Cadsby, C. B., & Maynes, E. (1998). Choosing between a socially efficient and free-riding equilibrium: Nurses versus economics and business students. *Journal of Economic Behavior & Organization*, 37(2), 183–192. doi:10.1016/S0167-2681(98)00083-3.
- Cadsby, C. B., Maynes, E., & Trivedi, V. U. (2006). Tax compliance and obedience to authority at home and in the lab: A new experimental approach. *Experimental Economics*, 9(4), 343–359. doi:10.1007/s10683-006-7053-8.
- Cameron, L. (1999). Raising the stakes in the ultimatum game: Experimental evidence from Indonesia. *Economic Inquiry*, 37, 47–59.
- Cameron, L., Chaudhuri, A., Erkal, N., & Gangadharan, L. (2006). Propensities to engage in and punish corrupt behavior: Experimental evidence from Australia, India, Indonesia, and Singapore. University of Melbourne, Department of Economics, mimeo.
- Carbone, E. (2005). Demographics and behaviour. *Experimental Economics*, 8, 217–232. doi:10.1007/s10683-005-1464-9.
- Cason, T., Gangadharan, L., & Duke, C. (2003). A laboratory testbed for emissions trading in Port Phillip Bay, Victoria. *Ecological Economics*, 46, 469–491. doi:10.1016/S0921-8009(03)00187-3.
- Cason, T., & Noussair, C. (2007). A market with frictions in the matching process: An experimental study. *International Economic Review*, 48(2), 665–691. doi:10.1111/j.1468-2354.2007.00441.x.
- Charness, G., & Rabin, M. (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Economics*, 117, 817–869. doi:10.1162/003355302760193904.
- Cooper, D., Kagel, J., Lo, W., & Gu, Q. (1999). Gaming against managers in incentive systems: Experimental results with Chinese students and Chinese managers. *The American Economic Review*, 89(4), 781–804.
- Croson, R., & Gneezy, U. (2004). Gender differences in preferences: A review of economics experiments. opim.wharton.upenn.edu/~crosonr/publications.html.
- Davis, D. D., & Holt, C. A. (1993). *Experimental economics*. Princeton, NJ: Princeton University Press.
- Fehr, E., & List, J. (2004). The hidden costs and returns of incentives—trust and trustworthiness among CEOs. *Journal of the European Economic Association*, 2(5), 743–771. doi:10.1162/1542476042782297.
- Gick, M., & Holyoak, K. (1980). Analogical problem solving. *Cognitive Psychology*, 12(3), 306–355. doi:10.1016/0010-0285(80)90013-4.
- Harrison, G., & List, J. (2004). Field experiments. *Journal of Economic Literature*, 42(4), 1013–1059. doi:10.1257/0022051043004577.
- Harrison, G., & List, J. (2005). Naturally occurring markets and exogenous laboratory experiments: A case study of the Winner's curse. www.bus.ucf.edu/wp/content/archives/03-14Glenn.pdf.

- Kaufman, D. (2005). 10 myths about governance and corruption. *Finance and Development*, 42(3), 41–43.
- Kovalchik, S., Camerer, C., Grether, D., Plott, C., & Allman, J. (2004). Aging and decision making: A comparison between neurologically healthy elderly and young individuals. *Journal of Economic Behavior & Organization*, 58, 79–94. doi:10.1016/j.jebo.2003.12.001.
- Levitt, S., & List, J. (2006). What do laboratory experiments tell us about the real world? pricetheory.uchicago.edu/levitt/LevittCV.html.
- List, J. (2003). Does market experience eliminate market anomalies? *The Quarterly Journal of Economics*, 118(1), 41–71. doi:10.1162/00335530360535144.
- Olken, B. (2006). Corruption perceptions vs. corruption reality. <http://www.nber.org/~bolken/>.
- Perkins, D., & Salomon, G. (1988). Teaching for transfer. *Educational Leadership*, 46(1), 22–32.
- Potters, J., & van Winden, F. (1996). The performance of professionals and students in an experimental study of lobbying. papers.ssrn.com/sol3/papers.cfm?abstract_id=2067.
- Salomon, G., & Perkins, D. (1989). Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon. *Educational Psychologist*, 24(2), 113–142. doi:10.1207/s15326985ep2402_1.
- Schmitt, P. M. (2004). On perceptions of fairness: The role of valuations, outside options, and information in ultimatum bargaining games. *Experimental Economics*, 7, 49–73. doi:10.1023/A:1026210021955.